STUDY ON THE PROPERTIES OF SHREDDED TYRE AND RIVER SAND MIXTURE

ABDUL RAIS YUSOF

B.Eng(Hons) (Civil)
UNIVERSITI TEKNOLOGI MARA
2005

STUDY ON THE PROPERTIES OF SHREDDED TYRE AND RIVER SAND MIXTURE

BY

ABDUL RAIS YUSOF

Report is submitted as
the requirement for the degree of
Bachelor Engineering (Hons) (Civil)

UNIVERSITY TEKNOLOGI MARA
APRIL 2005

DECLARATION BY THE CANDIDATE

I Abdul Rais Yusof, 2001446801 confirm that the work is my own and the appropriate credit has been given where reference has been made to the work of others.

(_____)

20 April 2005

ACKNOWLEDGEMENT

In The Name of Allah, The Most Beneficent and The Most Merciful.

I would like to give my appreciation to individual that had been helping me in preparing my research proposal especially to Mr Anas bin Ibrahim as supervisor and mentor in guiding me through the research.

I also like to thanks to Mis Farah Hariyani Haris the laboratory technician for assisting me at geotechnical lab of UiTM Permatang Pauh.

My father, mother and my brother and sister who had been by my side all this time and the source of my will.

Lastly, I would like to thanks to all member and group that had been helping me to complete this research.

Thank You.

ABSTRACT

The objective of the research is to gather information on the properties of shredded tyre in different percentage of addition with sand. A comparison will also be made to find mixture that obtained Waste tyre disposal is a problem faced by every country in the world today. In America alone, approximately 280 million tires are discarded each year by American motorists. In America steps had been taken to counter this problem where at least 15 states have utilized scrap tire shreds or chips mix with soil as a lightweight fill material for the construction of embankments or backfills. The most obvious advantage is that of reduced unit weight, which is especially beneficial in situations where an embankment is to be constructed over an area with low bearing support. Tyre shred can be a very economical alternative to imported earth borrow.In Malaysia however, no effort had been done yet to counter this problem. This is may due to lack of confidence in utilizing waste tyre. This can be countered by conducting research to gather knowledge on this material.
the most valuable engineering properties. Past research had show that the mixture possessed properties suitable for engineering use such as well gradation in particles, low unit weight and acceptable internal angle of friction.
A property of this mixture is determined by conducting a sieve test, proctor test and shear box test. The mixture is determined by percentage of shredded tyre added to certain weight of sand river. The percentage of shredded tire is 10%, 30%, 50%, 70% and 90% of dry weight of river sand. 100% Sand River and 100% shredded tire act as reference.
The result of the testing indicated that 30% addition of tyre produce the best properties for engineering used. In this mixture, it is classified as a well graded particles, a maximum dry density of 1.5 Mg/m^3 with optimum moisture content of 12.9%. The 30% mixture of tyre also possesses an angle of internal friction of 30^0 with cohesion value of 7.88Kpa. The results also indicate tyre can be stated as a cohesion agent to the mixture while sand as a factor to the increase in internal angle of friction. The availability of tyre in mixture also resulted a lighter mass suitable for embankment.